

**PCT**

NOTIFICATION CONCERNING  
TRANSMITTAL OF COPY OF INTERNATIONAL  
PRELIMINARY REPORT ON PATENTABILITY  
(CHAPTER I OF THE PATENT COOPERATION  
TREATY)

(PCT Rule 44bis.1(c))

To:

GIOENI, Mary, Louise  
Heslin Rothenberg Farley & Mesiti  
5 Columbia Circle  
Albany, New York 12203  
ETATS-UNIS D'AMERIQUE

PEH/SSP

Date of mailing (day/month/year)

02 March 2006 (02.03.2006)

Applicant's or agent's file reference  
0094.064AWO

**IMPORTANT NOTICE**

International application No.  
PCT/US2004/027122

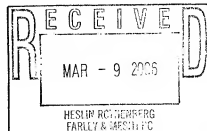
International filing date (day/month/year)  
20 August 2004 (20.08.2004)

Priority date (day/month/year)  
21 August 2003 (21.08.2003)

Applicant

Rensselaer Polytechnic Institute et al

The International Bureau transmits herewith a copy of the international preliminary report on patentability (Chapter I of the Patent Cooperation Treaty)



The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Authorized officer

Simin Baharlou

## PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference 0094.064AWO	FOR FURTHER ACTION		See item 4 below
International application No. PCT/US2004/027122	International filing date ( <i>day/month/year</i> ) 20 August 2004 (20.08.2004)	Priority date ( <i>day/month/year</i> ) 21 August 2003 (21.08.2003)	
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237			
Applicant Rensselaer Polytechnic Institute			

- This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).
- This REPORT consists of a total of 8 sheets, including this cover sheet.  
In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.
- This report contains indications relating to the following items:
 

<input checked="" type="checkbox"/> Box No. I	Basis of the report
<input type="checkbox"/> Box No. II	Priority
<input checked="" type="checkbox"/> Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input checked="" type="checkbox"/> Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/> Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input checked="" type="checkbox"/> Box No. VI	Certain documents cited
<input type="checkbox"/> Box No. VII	Certain defects in the international application
<input type="checkbox"/> Box No. VIII	Certain observations on the international application
- The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis.2).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Date of issuance of this report 21 February 2006 (21.02.2006)
	Authorized officer  Simin Baharlou
Facsimile No. +41 22 740 14 35	Telephone No. +41 22 338 71 30

# PATENT COOPERATION TREATY

REC'D 08 JUN 2005

WIPO

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From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/US2004/027122

International filing date (day/month/year)  
20.08.2004

Priority date (day/month/year)  
21.08.2003

International Patent Classification (IPC) or both national classification and IPC  
H01B3/00, H01B3/02, C08K3/22, C08K3/04

Applicant  
RENSSELAER POLYTECHNIC INSTITUTE

### 1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☒ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

### 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

### 3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



European Patent Office  
D-80298 Munich  
Tel. +49 89 2399 - 0 Tx: 523656 epmu d  
Fax: +49 89 2399 - 4465

Authorized Officer

Marsitzky, D

Telephone No. +49 89 2399-7275



**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/US2004/027122

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**Box No. I Basis of the opinion**

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1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - ☐ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material:
    - ☐ in written format
    - ☐ in computer readable form
  - c. time of filing/furnishing:
    - ☐ contained in the international application as filed.
    - ☐ filed together with the international application in computer readable form.
    - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application,
- ☒ claims Nos. 16, 17, 34, 35

because:

- ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):
- ☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):
- ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
- ☒ no international search report has been established for the whole application or for said claims Nos. 16, 17, 34, 35
- ☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:
  - the written form ☐ has not been furnished
  - ☐ does not comply with the standard
  - the computer readable form ☐ has not been furnished
  - ☐ does not comply with the standard
- ☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions.
- ☐ See separate sheet for further details

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/US2004/027122

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**Box No. IV Lack of unity of invention**

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1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has:
- ☐ paid additional fees.
  - ☐ paid additional fees under protest.
  - ☒ not paid additional fees.
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is
- ☐ complied with
  - ☒ not complied with for the following reasons:  
**see separate sheet**
4. Consequently, this report has been established in respect of the following parts of the international application:
- ☐ all parts.
  - ☒ the parts relating to claims Nos. 1-15, 18-33, 36-37

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**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	
	No: Claims	1-15, 18-33, 36-37
Inventive step (IS)	Yes: Claims	
	No: Claims	1-15, 18-33, 36-37
Industrial applicability (IA)	Yes: Claims	1-15, 18-33, 36-37
	No: Claims	

2. Citations and explanations

**see separate sheet**

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/US2004/027122

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**Box No. VI    Certain documents cited**

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1. Certain published documents (Rules 43*bis*.1 and 70.10)  
and /or
2. Non-written disclosures (Rules 43*bis*.1 and 70.9)  
**see form 210**

Reference is made to the following documents:

- D1\*:** WO 2004/038375 A (NORTH CAROLINA STATE UNIVERSITY;  
BURKHOLDER, JOANN; GLASGOW, HOWARD, J) 6 May 2004 (2004-05-06)
- D2:** DE 40 37 972 A1 (ASEA BROWN BOVERI AG, BADEN, AARGAU, CH) 27  
June 1991 (1991-06-27)
- D3:** EP-A-1 033 724 (ALCATEL) 6 September 2000 (2000-09-06)
- D4:** ONNEBY C ET AL: "Electrical properties of field grading materials influenced by  
the silicon carbide grain size" SOLID DIELECTRICS, 2001. ICSD '01.  
PROCEEDINGS OF THE 2001 IEEE 7TH INTERNATIONAL CONFERENCE  
ON 25-29 JUNE 2001, PISCATAWAY, NJ, USA, IEEE, 25 June 2001 (2001-06-  
25), pages 43-45, XP010561419 ISBN: 0-7803-6352-3
- D5:** MARTENSSON E ET AL: "Electrical properties of field grading materials with  
silicon carbide and carbon black" CONDUCTION AND BREAKDOWN IN SOLID  
DIELECTRICS, 1998. ICSD '98. PROCEEDINGS OF THE 1998 IEEE 6TH  
INTERNATIONAL CONFERENCE ON VASTERAS, SWEDEN 22-25 JUNE  
1998, NEW YORK, NY, USA, IEEE, US, 22 June 1998 (1998-06-22), pages  
548-552, XP010296263 ISBN: 0-7803-4237-2
- D6:** WO 02/096982 A (NELSON, GORDON, L; YANG, FENG) 5 December 2002  
(2002-12-05)

D1\* is only relevant in a potential European Phase of the application (= certain document cited).

**1. Article 17 PCT:**

The Examining Division agrees with the objection put forward by the Search Division (see form PCT/ISA/206).

**2. Article 33 (2) PCT:**

- 2.1** The documents D2-D6 all disclose (see the passages cited in the search report) field grading compositions comprising a) a nanosized filler and b) a polymer matrix. Thus



the subject matter of claim 1 is not novel.

2.2 General remark: the term "heterogeneously distributed" is vague and unclear - this feature does not help to differentiate the present application from the prior art documents.

**3. Article 33 (3) PCT:**

Providing an amended main claim which meets the requirements of Article 33 (2) PCT, the applicant should relate the distinguishing feature to a surprising (unexpected) technical effect or make plausible that the distinguishing feature is not derivable from prior art teaching.